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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/839,759	04/20/2001	Filippo Pironti	1085-2	1279
23869	7590	01/15/2004	EXAMINER	
HOFFMANN & BARON, LLP 6900 JERICHO TURNPIKE SYOSSET, NY 11791			NGUYEN, TAM M	
			ART UNIT	PAPER NUMBER

1764

DATE MAILED: 01/15/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/839,759

Applicant(s)

PIRONTI ET AL.

Examiner

Tam M. Nguyen

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 18 December 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-5 and 8-15 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☒ Claim(s) 12 and 13 is/are allowed.
- 6) ☒ Claim(s) 1-5, 8-11, 14, and 15 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. §§ 119 and 120

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. _____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
* See the attached detailed Office action for a list of the certified copies not received.
- 13) ☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application) since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.
a) ☐ The translation of the foreign language provisional application has been received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121 since a specific reference was included in the first sentence of the specification or in an Application Data Sheet. 37 CFR 1.78.

Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892) 4) ☐ Interview Summary (PTO-413) Paper No(s). _____
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948) 5) ☐ Notice of Informal Patent Application (PTO-152)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ 6) ☐ Other: _____

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DETAILED ACTION

Response to Amendment

The rejection of claims under 35 USC § 112 is withdrawn by the examiner in view of the amendment filed on December 18, 2003.

Continued Examination Under 37 CFR 1.114

A request for continued examination under 37 CFR 1.114, including the fee set forth in 37 CFR 1.17(e), was filed in this application after final rejection. Since this application is eligible for continued examination under 37 CFR 1.114, and the fee set forth in 37 CFR 1.17(e) has been timely paid, the finality of the previous Office action has been withdrawn pursuant to 37 CFR 1.114. Applicant's submission filed on December 18, 2003 has been entered.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.

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4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Applicant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 1-5, 8-11, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable by Shu et al. (6,125,653).

Shu discloses a process for producing liquefied natural gas from a gas mixture comprising methane, ethane, and propane. The process includes steps of cooling the gas mixture which is then distilled in a demethanizer column to produce a methane-rich stream and an ethane/propane-rich stream. The methane rich stream is then cooled with cryogenic methane vapor. The cooled methane stream is at a first temperature and pressure and expanded by turbo expanders to provide a methane-cooling source for a cryogenic heat exchanger. After the expanding step, the methane rich stream has a second temperature and pressure that are lower than the first temperature and pressure. The ethane/propane rich stream is then passed into a de-ethanizer column to distill ethane from propane. (See entire document)

Shu does not specifically disclose that the gas mixture contains 50-75% by mole of methane, 15-40% by mole of ethane and 1-4 % by mole of propane. However, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have

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modified the Shu process by using a feed gas having the claimed composition because Shu discloses that the feed gas for the process may comprise any gaseous mixture of hydrocarbons containing at least some methane. Therefore, one having ordinary skill in the art would employ any gas mixture including the claimed gas feed in the process of Shu and it would be expected that the results would be the same or similar when using the claimed feed gas in the process of Shu. (See col. 2, lines 22-25)

Shu does not specifically disclose the percentage of purity of methane, ethane, and propane in recovery streams. However, the modified process of Shu is similar to the claimed process in term of feedstock, distilling, cooling, pressuring, and expanding. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Shu by operating the process under conditions to produce a stream of methane, ethane, and propane with the purity as claimed because one of ordinary skill in the art would determine to control and operate the distillation columns at effective conditions to arrive at the claimed purity if the claimed purity of methane, ethane, and propane is desirable.

Shu does not specifically disclose that the feed is cooled by three sources as claimed. How Shu discloses that the vapor stream is subsequently cooled by methane, expansions and other cooling sources. Therefore, it would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process of Shu by cooling the vapor stream with the three sources as claimed because Shu desires to cool the vapor stream to a very low temperature to remove methane from heavier hydrocarbons and it would be expected that the results would be the same or similar when using the claimed cooling sources in the Shu process because the cooling sources would not affect the outcome of the process.

Response to arguments

The argument that Shu fails to teach or suggest that the heat exchanger 102 is a cryogenic heat exchanger is not persuasive because in step b) of claims 1 and 14 the hydrocarbon feed is cooled to provide a partially condensed feed stream. Claims 1 and 14 do not claim that the hydrocarbon feed is cooled by a cryogenic heat exchanger.

The argument that the modification of the heat exchanger 102 of Shu to a cryogenic heat exchanger would produce substantial liquids and would render feed expander 104 and or the demethanizer to become inoperable for its intended purpose is not persuasive because claims 1 and 14 do not claim that the hydrocarbon feed is cooled by a cryogenic heat exchanger. Moreover, in the Shu process the feed stream is pre-cooled in feed exchanger 102 by heat exchange with cold methane vapor as disclosed in the pre-cooled step in the present invention (see paragraph 0023).

Allowable Subject Matter

Claims 12 and 13 are allowed.

The following is a statement of reasons for the indication of allowable subject matter: The primary reason for allowance is that the prior art of record does not disclose or suggest a process for recovering ethane from a methane, ethane and propane wherein the vapor hydrocarbon feed stream is cooled in a cryogenic heat exchanger by three sources wherein the first source is the condensed liquid hydrocarbon feed stream, the second source is the methane-rich stream, and the third source is the expanded methane-rich stream as called for in claim 12.

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Conclusion

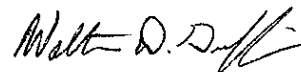
Any inquiry concerning this communication or earlier communications from the examiner should be directed to Tam M. Nguyen whose telephone number is (571) 272-1452. The examiner can normally be reached on Monday through Thursday.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Glenn Caldarola can be reached on (571) 272-1444. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is (703) 308-0661.

Tam M. Nguyen
Examiner
Art Unit 1764

TN


Walter D. Griffin
Primary Examiner